

Didactic Experiences: **Theoretical training bases for young athletes in aquatic sports on the natural environment: Bodyboard**

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Theoretical training bases for young athletes in aquatic sports on the natural environment: Bodyboard

Bases teóricas del entrenamiento para jóvenes deportistas en deportes acuáticos en el medio natural: Bodyboard

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Abstract

The bodyboard is a surfing discipline whose growth has been increasing since the 60s, so it is considered one of the fastest growing aquatic sport in the world. Despite this, scientific research of this discipline has been reflected poorly compared to other sports. As in any other sport, the bodyboarder requires of specific physical and physiological conditions to help it to practice the sport effectively as it does not follow a specific training or develop conditioning programs. Therefore, this article comes up with the idea of providing a basis for determining the most appropriate training based on study objectives and bodyboard actions to improve physical, technical and psychological condition of the bodyboarders based on the particularities of their own sport and the athlete, taking into account scientific studies in the field at hand: the Bodyboard.

Key words

Bodyboard; physical training; technical; tactical; psychological.

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Resumen

El bodyboard es una disciplina del surf cuyo crecimiento ha sido considerable desde la década de los 60, por lo que está considerado como uno de los deportes acuáticos de mayor crecimiento del mundo. A pesar de esto, la investigación científica de esta disciplina ha estado mal reflejada en comparación con otros deportes. Al igual que en cualquier otro deporte, el bodyboarder necesita de unas condiciones físicas y fisiológicas específicas que le ayuden a practicar el deporte de manera efectiva ya que no siguen un entrenamiento específico ni desarrollan programas de acondicionamiento. Por lo tanto, este artículo surge con la idea de aportar unas bases para determinar el entrenamiento más adecuado basado en los objetivos y estudio de las acciones del bodyboard para mejorar la condición física, técnica y psicológica de los jóvenes bodyboarders en base a las particularidades del propio deporte y del deportista, teniendo en cuenta los estudios científicos en el ámbito que nos ocupa: el Bodyboard.

Palabras clave

Bodyboard; entrenamiento físico; técnico; táctico; psicológico.



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Introduction

Bodyboard is a surf's discipline which has been developing quickly during the last 10 years and nowadays it is considered as one of the most increasing aquatic sports around the world. As a result, the events are getting more competitive and demanding, and bodyboarders have to dedicate more time to train so they can get better, including training out of the water. (Rodríguez-Matoso et al., 2015). Surf as a leisure and sportive activity has increased since 1960, but the scientific investigation has been reflected in a bad way comparing to most of other conventional sports (Furness et al., 2015)

Bodyboard is an activity which is characterized by its efforts, because they are episodes of intermittent exercises with different intensities and duration which involve different parts of the body and numerous recovery periods (Mendez-Villanueva &

Bishop, 2005) and the influence of many environment factors may affect to the temporary structure of the activity, for example, wave's height, inconsistent waves, flows, frequency and length of the wave, etc. (Mendez-Villanueva & Bishop, 2005).

Bodyboard's success, requires high technique competence level and physiological aptitude, to provide the propulsion through the water and place yourself correctly to catch more appropriate waves. This propulsion it is produced by rowing, using dynamic balance and lower body's power in order to stay in the paipo and realize maneuvers (Secomb, Sheppard, & Dascombe, 2015)

The training planning for a sportive discipline depends on different factors, that is why scientific data bases need to be sought to ensure a balanced training (Gorostiaga, 2000).

This article emerges with the objective of establish and propose a more appropriate training type, to improve the physical condition, technique and psychology of young bodyboarders according to the study of the athlete's actions.

Training objectives in bodyboard.

Training to practice bodyboard is focused on two different aspects:

- Develop and improve the anatomical-physiological status (Willmore, Costill, 2007):

A person who practices bodyboard as well as most athletes who practice a specific discipline, they need a physical and physiological specific status to help them practice this sport in a effective way. This status is more relevant as the technique level of the athlete increases, as well as the objectives he or her wants to accomplish. There are sports in which the morphology of the athletes is essential, however for bodyboard practice, does not exist a particular anthropometric profile. Anthropometric analysis have revealed that body composition of surfers do not play a key role related to

efficiency (Mendez-Villanueva & Bishop, 2005). According to a anthropometric evaluation of men and women, they present a wide range of body fat, what suggest that there is not an ideal fat level related to surf efficiency. In general, the estimated percentage of body fat of surfers it is higher comparing to another kind of resistance athletes at concordance level, although is lower than the average of men in university age (Mendez-Villanueva & Bishop, 2005).

Aerobic capacity plays a key role during the realization of high intensity intermittent exercise speeding up the recovery process. Therefore, an oxygen transportation system well trained is beneficial to keep a high physical performance along the extensive period of high intensity intermittent exercise (Mendez-Villanueva et al., 2005). That is why it is extremely important to develop a good lung capacity. Although bodyboard technique is really specific, and its training out of the water seems to be practically impossible, it is proposed as an alternative, to carry out actions which imitate the specific demands of this sport, because they can help surfers to maintain a optimal physical condition during the periods in which bodyboard can not be practiced, for example, as it happens in the case of young athletes due to their academy duties. Besides, additional activities out of the water, can be used as a complement to improve the specific physiological weaknesses (Mendez-Villanueva, Bishop, & Hamer, 2006).

- To Develop physical capacities.

Bodyboarders do not follow a specific training or refurbishment programmes. To maintain their physical condition, they spend between 2 and 7 hour sailing each day, during more than 5 days a week.

Basic physical qualities which conform the status and the physical condition of each person, and through training sessions, we can improve body's capacities. These capacities could be divided in two groups (Muños, 2009):

- Condition capacities: strenght, resistance, speed, and flexibility.

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- Coordination capacities: balance and coordination

The development of these capacities through sportive training follows general objectives. As a result we propose to accomplish the following general objectives of bodyboard, according to different levels:

Physical:

- To increase muscular efficiency.
- To improve energy dose to reach better results in competitions during subsequent training sessions.

Technical:

- To develop a higher technification developing in a gradual way, coordination and efficiency on bodyboard maneuvers.
- To increase the capacity to face unexpected situations (changing environment, broke material, etc.)

Tactical:

- To resolve difficult situations such as choosing waves out of a windsock or the correct pose on the thin edge of the wedge.

Psychological:

- To improve concentration and propitiate a selfevaluation along the practice to improve the result during the development of the training session or a competition.

Study of bodyboard actiong to define a training type.

The analysis of time-movement provides useful information about physical needs asociated to a particlar sport. This system has been used to evaluate activity profiles of different sports and their nformation may be used as a base to design test protocols and the training programmes according to the sport characteristics(Mendez-Villanueva et al., 2006).

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At a driving structural level present two kind of actions (Izquierdo, 2008):

- Cyclic actions: Those which make possible the bodyboarder movement when he or her is not pushed by the wave. This force is no homogenously generated by all the involved muscular areas.
- Acyclic actions: Those which represent all the maneuvers that the athlete executes when he or her slides along the wave, so they are changing and consequential to the wave adaptation according to the intended technical gesture.

To carry out an ideal bodyboard training session is essential to plan a serie of exercises in both land and water, however, the observation of key actions takes places completely in the aquatic environment, because usual bodyboard actions are developed in this environment. Although, to improve technical training, it is recommended to carry out sessions out of water in order to get better maneuvers L. Lundgren et al., 2014), since criteria regarding competition punctuation have been changing recently, rewarding those complex and risky maneuvers (Lina Lundgren, Dunn, Nimphius, & Sheppard, 2013).

Recent investigations suggest that during qualifying competition and also during trainins sessions, surfers spend 50% of the total time rowing in the water, a 40% static, waiting for the best wave, a 5% navigating the waves, and a 5% sailing to get to the breakers to place themselves in the best manner for the next wave (Secomb et al., 2015).

Training components of bodyboard

Surf, as bodyboard, are activities characterized by having an intermittent exercise origin, variable intensity, which involves body areas and numerous recovery periods (Mendez-Villanueva & Bishop, 2005). In addition, both, surf and bodyboard training sessions and competition, can be carried out in a huge range of environment conditions (different wave sizes, changing situation of the lineup, etc). This variables will have impact in physiological demand in surf practice. Therefore, surfers and bodyboarders

should respond to extensive periods of intermittent exercise, differentiating demands coming from senior member (row) and lower limb (flutter). This sports, also require a high mental and cognitive activity to apply to a wide environment conditions. However, during training sessions in the water, most of the athletes are not aware that they are training and most of them would consider this activity as something to have fun not as a training session (Mendez-Villanueva & Bishop, 2005).

A high aerobic capacity, specially, maximum oxygen consumption (VO_2 peak), muscular resistance, capacity to apply strength with the ideal synchronization and coordination, balance, pose control, and muscular power are key attributes of competitive surfers (Freeman, Bird, & Sheppard, 2013). Therefore, to improve bodyboard's efficiency we propose the following needs for improvement:

A) Physical Condition.

In bodyboard it is essential to realize an ideal training session out of water, apart from warming up and stretching before starting the session. Reaching an ideal flexibility will help to acquire a better technique, letting us enhance extreme movements as the ones executed in bodyboard, as well as better resistance to muscular injuries.

A.1) Resistance.

Resistance is defined as "Capacity to psychologically and physically resist a load during a long period of time, so finally insurmountable fatigue is produced due to intensity and the duration of it, and/or recovering quickly after psychological and physical efforts" (Zintl, 1991)

Basic resistance: Basic character to develop other capacities, divided in:

- Resistance base I: separated from sportive modality.
- Resistance base II: related to sportive modality.
- Resistance base III: Game/fight resistance with load acyclic changes.

Specific resistance: Focused on the specific load structure of the modality, ideal relationship between intensity and load's duration, divided in:

- Short time resistance (30 seconds to 2 minutes)
- Median time resistance (from 2 to 10 minutes)
- Long time resistance I (from 10 to 35 minutes)
- Long time resistance II (from 35 to 90 minutes)
- Long time resistance III (from 90 minutes to 6 hours)
- Long time resistance IV (more than 6 hours)

There is not a determined training session duration of bodyboard, however, the direct observation and conversations with professionals regarding this discipline, provided us the fact that normal duration goes around around 25 or 30 non stop minutes.. This data would place training sessions in the specific long time resistance I of the Zintl classification 1991.

Intensity, duration and recovery, are the most important indicators to plan a training session regarding resistance in the best possible conditions according to the activity. Due to the type of this sport, we consider that the best training session one could carry out is a fractionated iterative (Solé, 2003).. This method is focused on the introduction of continuous changes of the structure of the different components of the training session as exercises, intensity, breaks, etc.

In bodyboard, the duration of the maximum effort during a wave can be 3 seconds in one, 1 seconds on the following one and 6 seconds the third one, and also the break in between waves can be different each time. To sum up, the loads work and its density do not follow a predefined order or the same structure along the time.

That is why, an exhaustive investigation of this method and its application pattern would be really interesting for its practical implementation in bodboard, as a method to train and improve the cardio-pulmonary resistance of the athlete. It should be considered also in bodyboard, that even though the most important demonstration are those coming from the aerobic system, there are also constantly, short term or really short term anaerobic actions. We observe how athletes resistance gets better also through a type of fractionated training session, as capacity to change systems quickly and efficiently (Willmore et col., 2007)

A.2) Strength.

Ideal training session for strength regarding bodyboard should focus on either upper body and lower body because a correct coordination between both will allow the efficiency improvement of the bodyboarder.

Upper body.

The strength of the upper body plays a key role on the improvement of the row (Sheppard et al., 2012). That is why, upper body, in upper body, the most important muscular group is the abdominal one, followed by the lumbar. Abdominals are in charge of absorbing the strength generated by the impact, turns and other kind of strengths which makes the spine expand on each one of the maneuvers realized during the practice.

As orientations for the lumbar and abdominal training we present the following (Heyward, 2006):

- We should keep a balanced relation between lumbar training and abdominal raining. A reation 1-3, respectively, will be appropriate.
- The number of repetitions of a serie depends on the hardness of the final contraction recommending to impose an enough intensity on each one of the

repetitions.

- Breathe during the first part of the exercise, to expel the air through the mouth during the last third of the repetition where abs are contracted.
- To keep the lumbar area in touch with the ground on each contraction and to realize a shoulder lifting during bending.

Inside the lumbar muscular group, the most important is the lumbar square. Its function is to sustain lumbar and homolateral spine as well as pelvis inclination, so it is a bilateral form extensor for lumbar spine and torso. (Berg 2011). A way to work with this muscle is to do exercises with resistance to the own corporal weight. A good example of this exercise of lumbar hyperextension with eccentric abdominal control. The use of "fitball" helps to develop these exercises.

Lower body.

In surf and bodyboard, the realization of maneuvers requires strength and power from lower body. Lower limb's position in paipo will change between bending and extension, requiring a wide range of movements of lower limb joints. Besides, the bodyboarder will have to produce and stop big forces along a large range of movement, due to the complex maneuvers required.

Leg muscles are used to execute movements and also to search the best waves. (Rodríguez-Matoso et al., 2015). This way, the lower body training for bodyboard should focus on reaching balance between maximum strength and strength-resistance, due to actions carried during practice, such as the continuous leg flutter.

In order to train lower body, we will turn to out of water exercises as well as exercises inside the water. This way, a recommended out of water exercise to improve strength-resistance would be run on resistant ground, such as sand or areas with some positive unevenness. Inside water, a recommended training would be, to move above

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the paipo, only propelled by the strength generated by the leg flutter.

A.3) Speed

The specific training of the speed at physic level developed in other disciplines, would not have the same importance when we talk about bodyboard due to the type of this sport. However, it is important to focus on two types of speed related to decision-making; *simple reaction speed*, important for movements like neck turns, the limb pose to balance the table or submerge under the wave's bottom, for example, *discriminative reaction speed* (Sebastiani, González, 2000) key on the decision-making training on bodyboard. This reaction speed is shown when the subject should face several stimulus, in short term, and where the decision-making results may be fully antagonistic (Sebastiani et cols. 2000). An example would be the decision of increase or decrease on the vertical plane of the wave while it is slipping, because one or the other decision shackles determined events which will require new discriminatory reactions. The increase would involve the need to realize a turn, and the decrease would involve placing to gain speed to overcome the wave.

The reaction speed training is long and complex, so it can be carried out through practical exercises with variable conditions (tides, wind, table position, etc.) which allows us to make decisions when we face similar characterized stimulus, verifying lately, the results of different made decisions.

A.4) Flexibility and joint mobility

This section, refers to the relevant role of stretching, before and after bodyboard practice as well as to the stretching appropriate types to the correct practice of this sport.

The stretching type more appropriate before going into the water is the dynamic stretching (Bhem, Chaouachi, 2011). Movements should be fast, however, rebounds should be avoided. Following these, the muscles we need to stretch before going into

the water and their intervention during practice are the following:

Neck muscles: In all maneuvers realized in bodyboard is essential the neck's movement, as higher the flexibility is in this area, easier would be to execute maneuvers.

Trapeze: it is really importante, because its contractures are usual due to the air maneuvers that can be developed.

Triceps and pectoral: Really importante due to their role of support the body against the table and the torso angle during the tricks.

Wide dorsal and oblique ab: In bodyboard all maneuvers are realized with a movement trick. That is why is important to maintain enough flexibility in this muscle.

Lumbar square: To maintain the square with flexibility provides benefits to surfing athletes. In first place due to the fact that this muscle is involved on breathing process, and in second place, because a correct flexibility will help to prevent a overload in this area.

Quadriceps, hamstring, abductors, and calfs. Leg's musculature has to do a lot with all the movements, increasing the effort because they are constantly fluttering during practice. Referring to hamstring and calfs, it is really important to have flexibility to prevent muscle spasms because of practice hours regarding the back part of the leg, due to the fact that it is the most usual pose above the table.

Once the training is finished the recommendation is to stretch the muscles completely, where they might have been involved during the session.

We will develop the joint movement in the initial phase of any physical activity session, at the gym or before going into the water, with the objective of getting prepared the organism to face the higher physiological demand needed, reaching an

increase of neuromuscular coordination, delaying gradually the appearance of fatigue and decreasing the injury risk.

B) Technical.

The training of technique in bodyboard is really important as well, such as the physical one. Actions which conform sportive technique are motor habits that the athlete learns and improves along his or her sportive stage. Motor habit is really important and it is divided in three phases. (Valdés, 1996).

Three phases of motor habit formation are:

- The whole image of the action, through a global demonstration, the explanation and fragmentation of the action's demonstration into pieces. The essential move goes along with unnecessary moves which involve a high energetic cost which needs to be refined during practice.
- If the exercise is repeated, the athlete is able to receive clear and distinguished muscle and joint sensations, so the second phase of the habit formation process starts.
- Third phase has to do with perfection, which allows the execution of the actions according to the movements economy and increasing their precision.

A bodyboarder will be more technique as the grade of perfection in tricks execution and sliding through the waves increases.

A highlighted aspect in order to improve the technical aspect would be to record the training sessions. The objective of these, would be to analyze later the carried out actions during practice, in order to see the weak points, the opportunity loss and the incorrect executions. This practice would be really helpful with the possibility of the introducing the adaptations needed in order to make them perfect.

Bodyboarder relevant technical aspects to train:

- The position of the wave's arm / control of the peak. It is the most common mistake of average bodyboarder. The advanced position loses verticality and so, a bad executed first turn with lack of strength. On the other hand a delayed position would make the athlete lose the peak of the wave, making you surf above the foam without options to place yourself in the most energetic part of it. To correct this problem the solution would be to practice more the correct position on the wave, in order to intuit better the behaviour of the wave and place yourself at the best point.
- To reach more speed. An aspect which distinguishes amateur bodyboarders from the professionals is when they do not use their own body to generate speed in the wave. Through experience, we will improve a technique which consists in going up to the wave's lip, and once there, make pressure on a progressive way to go down to the bottom of the wave, and it is advisable to repeat simultaneously this process to manage as it is convenient, the speed during the slide. It is not recommended to remain in the mid wave because of the loss of speed.
- Neck's position. Neck and head is really important to balance turns. The result of the position and correct turn of the neck, will make shoulders, torso and hips adapt, and divide the weight in a correct way during the execution of maneuvers. Even though this turn is really important, many professional bodyboarders forget to do it. To turn your head will provide knowledge about everything we need to finish the maneuver. It is a key point to lift your eyes over the horizontal shaft which it is establishing our body above the table, this way, anticipating our path will make that the chain reaction we talked about before, makes us realize a good turn.

C) Tactical

Méndez.Villanueva and Bishop in 2005, made a study about physiological performance of surfists, confirming the existence of different tactical decisions during the competition, such as scores, wave's selection, which may be important in the activity path of surfists. Besides, they inform that surfists spend between 45% and 50% of their

total time rowing, and between 35% and 40% of the time stopped. The rest of the time is divided into navigating waves and other activities such as recovery or duck diving. This data cannot be applied at bodyboard and allows the athlete to analyze the most important tactical aspects during competition, for example the strategy, which is considered essential. Each wave of the windsock is important to reach the objectives and obtain a better score.

Keeping in mind the previous percentages, we could say that the bodyboarder would have a short period of time in the wave, making decisions also in a short period of time, not all correct or appropriate, with the capacity to resolve hard situations during the competition or free surf are important to surf (Tran et al., 2015).

D) Psychological.

Bodyboard has a really important mental component, because each wave lasts only few seconds, so every maneuver the athlete chooses to do lasts tenths of a second. Professional bodyboarders highlight the importance of self-confidence or develop a better skills, so confidence is a really important link between the athlete and his or her ability. Making slow decisions may make the athlete lose valuable time during the maneuver.

Psychological science has shown that relation between motivation and the accomplishment of an objective, generate emotional reactions, so this subjectively reflects the real or thought satisfaction of a motivation. (Valdés, 1996).

Apart from working on confidence, it is also relevant the emotional state on many different areas, such as the correct breathing during practice. The emotional process conditioned by different factors are noticed by individuals on varied ways, conditioning or prevent their attention, their motor execution, the course of their thought, their heart beats or feeling anxiety (Valdés, 1996). There are factors that result interesting to

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highlight to determine the energetic control and moods through which bodyboarder goes through as the following:

- Sportive experience. Allows the athlete to regulate his or her mood.
- Motivation level. The posed objective cannot be analyzed apart from its real success possibilities, that is why is important the objectivity of the goal. An ambitious objective or an easy one, related to real physical-technical conditions, can cause a gradual decrease of motivation, and make difficult the energy needed to training and competition process. (Valdés, 1996)

Regulating our mood to this level will allow us to know our limits and possibilities at the time of facing changing and unexpected situations or even extreme.

Conclusions

The aim of this article is to show the patterns orientated to bodyboard practice from a general perspective, based on scientific evidence. So we may conclude that:

- Bodyboard has a character of short and intermittent effort, with huge break period in between each one of them
- Physical condition is going to be an essential factor regarding the bodyboarder performance.
- The relationship between components (Physical, technical, tactical and psychological) will make bodyboarder improve, and also improve his or her performance either with a competitive or leisure objective.

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